NOTICE

All drawings located at the end of the document.

DRAFT ENVIRONMENTAL RESTORATION RFCA STANDARD OPERATING PROTOCOL FOR ROUTINE SOIL REMEDIATION FY2002 NOTIFICATION#02-05 IHSS GROUP 800-2 AND 800-5

March 2002

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

2

ACRONYMS

AL	action level
D&D	Decontamination and Decommissioning
cy	cubic yard
EDDIE	Environmental Data Dynamic Information Exchange
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
NPWL	New Process Waste Lines
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pCi/L	picocuries per liter
PCOC	potential contaminant of concern
POC	Point of Compliance
POE	Point of Evaluation
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SOR	sum of ratios
SVOC	semivolatile organic compound
UBC	Under Building Contamination
ug/L	micrograms per liter
VOC	volatile organic compound

3

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002) Fiscal Year (FY)02 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites at the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) during FY02 The purpose of this Notification is to invoke the ER RSOP for IHSS Groups 800-2 and 800-5 Activities specified in the ER RSOP are not reiterated here However, deviations from the ER RSOP are noted where appropriate

Proposed remediation sites covered under ER RSOP Notification #02-05 are listed in Table 1 and the locations are shown on Figure 1

Table 1
FY02 Potential Remediation Areas

IHSS Group	IHSS/PAC/UBC Site	Potential Contaminants of Concern (PCOCs)	Media	Estimated Remediation Volume
800-2	UBC 881 – Laboratory and Office	Radionuclides Metals Polychlorinated Biphenyls (PCBs) Semivolatile Organic Compounds (SVOCs) Volatile Organic Compounds (VOCs)	Surface and Subsurface Soil	<1cy
	800-1205 – Building 881, East Dock	Radionuclides Metals SVOCs VOCs	Surface and Subsurface Soil	<1 cy
	000-121 – Original Process Waste Line (OPWL) Tank 24 - Seven 2,700-Gallon Steel Process Waste Tanks	Radionuclides Metals SVOCs VOCs	Subsurface Soil	<1 cy
	000-121 – OPWL Tank 32 - 131,160 Gallon Underground Concrete Secondary Containment Sump	Radionuclides Metal SVOCs VOCs	Subsurface Soil	<1 cy
	000-121 – OPWL Tank 39, Four 250-Gallon Steel Process Waste Tanks	Radionuclides Metal SVOCs VOCs	Subsurface Soil	<1 cy
800-5	UBC 887 – Process and Sanitary Waste Tanks	Radionuclides Metal SVOCs VOCs	Surface and Subsurface Soil	<1 cy
	IHSS 800-177 – Building 885 Drum Storage	Radionuclides Metals SVOCs VOCs	Surface and Subsurface Soil	<1 cy

4

2.0 IHSS GROUPS 800-2 AND 800-5

IHSS Group 800-2 includes UBC 881 – Laboratory and Office, PAC 800-1205 – Building 881, East Dock, 100-121 – Original Process Waste Line (OPWL) Seven 2,700-Gallon Steel Process Waste Tanks, 131,160 Gallon Underground Concrete Secondary Containment Sump, and Tank 39, Four 250-Gallon Steel Process Waste Tanks IHSS Group 800-5 includes UBC 887 – Process and Sanitary Waste Tanks and IHSS 800-177 – Building 885 Drum Storage Groups 800-2 and 800-5 are shown on Figure 2

2.1 Potential Contaminants of Concern

Potential contaminants of concern (PCOCs) at IHSS Group 800-2 and 800-5 were determined based on process knowledge and data collected during previous studies (DOE 1992 - 2001, DOE 2001a, DOE 2000a)

2.2 Project Conditions

The following conditions are present at this site

- Building 881 is primarily below ground,
- Tank 39 is within UBC 881,
- Tanks 24 and 32 at Building 887,
- UBC 887,
- Foundation drains on all sides of Building 881 and 887,
- Additional sumps and pits at UBC 881,
- One sump on the eastern side of Building 881,
- OPWL and NPWL between Buildings 881 and Tanks 24 and 32 at Building 887

2.3 Remediation Plan

The remediation plan for IHSS Group 800-2 and 800-5 includes the following objectives

- Remove contaminated soil to below Tier I Action Levels (ALs) (Figure 2)
- Remove tanks, sump, pits, and associated soil to below RFCA Tier I ALs (Figure 2)
- Disrupt foundation drain potential pathway (Figure 2)
- Remove OPWL and NPWL between Building 881 and Tanks 24 and 32 at Building 887,

- Remove tanks 24 and 32 at Building 887,
- The UBC 887 floor slab, which will be recycled in accordance with the RSOP for Recycling Concrete (DOE 1999), or disposed of, and
- Confirmation samples will be collected in accordance with the IASAP (DOE 2001a)

Additional remediation, if required, for OPWL (Figure 2) will be conducted when IHSS Group 000-2 (OPWL) and for NPWL when IHSS Group 000-4 (NPWL) is addressed

It is anticipated that after remediation there will be areas with concentrations of metals, radionuclides, and organics greater than background plus two standard deviations or method detection limits, but below RFCA Tier II ALs at this site Additionally, it is anticipated that there will be very few areas with concentrations above RFCA Tier II ALs

2.4 Stewardship Evaluation

Based on the PCOCs (Table 1 and Section 2 1) and the ER RSOP (DOE 2002), it is anticipated that all contamination above RFCA Tier I ALs will be remediated Figure 2 shows the potential remediation area Additional remediation to below Tier I ALs is not required by RFCA

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process A new map of residual contamination will be generated after remediation The following sections contain the stewardship evaluation

2.4.1 Proximity to Other Contaminant Sources

IHSS Group 800-2 and 800-5 are in the RFETS IA The nearby potential contaminant source is IHSS Group 000-2 (IHSS 162 – Radioactive Site 700 Area) This site, PCOCs, media of interest, and relationship to IHSS Group 800-2 are listed in Table 2 and shown on Figure 2

Table 2
Other Potential Contaminant Sources for IHSS Groups 800-2 and 800-5

IHSS Group	PCOCs/COCs	Media	Distance from IHSS Group 800-2
000-2 – Radioactive Site 700 Area IHSS 162	Radionuclides Metals SVOCs VOCs	Surface and Subsurface Soil	Approximately 115 feet to the west

IHSS Group 000-2 has PCOCs similar to, and in the same media as, IHSS Groups 800-2 and 800-5 It is anticipated that after remediation of this IHSS Group, it will have residual contamination in subsurface soil similar to the residual contamination anticipated at IHSS Groups 800-2 and 800-5

8

2.4.2 Surface Water Protection

Surface water protection includes the following considerations

Is there a pathway to surface water from potential erosion to streams or drainages?

Building 881 is underground except for the eastern side of the building and the site slopes southward There are two drainages, one to the west and one to the northeast Neither drainage connects to other Site drainages

Do characterization data indicate there are contaminants in surface soil?

Table 3 lists radionuclide data from IHSS Groups 800-2 and 800-5, along with background values and RFCA ALs for comparison

Table 3
Surface Soil Characterization Summary

Analyte	Maximum Result (picocuries per gram [pCi/g])	Background Plus Two Standard Deviations (pCi/g)	Tier II AL (pCi/g)	Tier I AL (pCi/g)
Americium-241	0 18	0 0227	38	215
Plutonium-239/240	0 76	0 066	252	1429
Uranium-234	1 31	2 253	307	1,738
Uranium-235	0 12	0 0939	24	135
Uranium-238	3 72	2	103	586

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

There are no POEs or POCs near IHSS Groups 800-2 and 800-5

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

Not applicable The 100-Year Average Erosion Map does not include areas in the IA

2.4.3 Monitoring

Monitoring includes the following considerations

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

Groundwater monitoring results from well 313589 upgradient of IHSS Groups 800-2 and 800-5, and wells 00797, 5387, 38591, 10592, 10692, and 10792 downgradient of IHSS Groups 800-2 and 800-5 were evaluated (DOE 2000b, 2000c, 2000d, 2001a, 2001b, 2001c, and 2001d) Results from well 313589 indicate uranium-233/234, uranium-238 and nickel concentrations in groundwater are greater than RFCA Tier II ALs Data from downgradient wells indicate uranium-233/234, uranium-238 are present at concentrations

9

greater than RFCA Tier II ALs Data from well 38591, indicate that strontium-89/90 is present at concentrations greater than RFCA Tier II ALs Data from wells 10592 and 10792 indicate selenium concentrations in groundwater are greater than RFCA Tier II ALs Table 4 lists maximum results from IHSS Groups 800-2 and 800-5 wells that exceed RFCA Tier II ALs

Table 4
Groundwater Exceedances Associated With IHSS Groups 800-2 and 800-5

Analyte	Well 313589 (pCi/l)	Well 00797 (pCi/l)	Well 5387 (pCi/l)	Well 38591 (pCi/l)	Well 10592 (pCi/l)	Well 10692 (pCi/l)	Well 10792 (pCi/l)	Tier II AL (pCi/l)	Tier I AL (pCi/l)
Strontium-89,90				0 901				0 852	85 2
Uranium-233/234	2 35	10 3	11	21 0327	29	19 2	6 51	1 06	106
Uranium-238	1 67	8 1	7 3	13 1608	19	10 6	5 2345	0 768	76 8
Analyte	**Well 313589 (ug/L)**	**Well 00797 (ug/L)**	**Well 53876 (ug/L)**	**Well 38591 (ug/L)**	**Well 10592 (ug/L)**	**Well 10692 (ug/L)**	**Well 10792 (ug/L)**	**Tier II AL (ug/L)**	**Tier I AL (ug/L)**
Nickel	150							140	14,000
Selenium					194		62 6	50	5,000

Groundwater quality at the upgradient well cannot be attributed to IHSS Groups 800-2 and 800-5 Groundwater quality at wells downgradient may have been impacted by potential contamination from IHSS Group 800-2 and 800-5

Can the impact be traced to a specific IHSS Group?

Radionuclides in groundwater monitoring wells at IHSS Groups 800-2 and 800-5 are similar to constituents detected above background plus two standard deviations in subsurface soil near these sites However, no Tier II or Tier I exceedances were found in subsurface soil

Are additional monitoring stations needed?

Current groundwater wells are appropriately placed to detect potential contamination at IHSS Groups 800-2 and 800-5

Can existing monitoring locations be deleted if additional remediation is conducted?

Not applicable

2.4.4 Stewardship Actions and Recommendations

The stewardship actions and recommendations for IHSS Groups 800-2 and 800-5 are as follows

10

- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following
  - Signs and barriers,
  - Restrictions on soil excavation, and
  - Soil excavations controlled through the Site Soil Disturbance Permit process
- Implement long-term stewardship actions, including the following
  - Federal ownership, and
  - Land use restrictions to prevent soil excavation Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan

These recommendations may change based on in-process remediation activities and other future RFETS remediation activities

2.5 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following

1 Provide a remedy consistent with the RFETS goal of protection of human health and the environment,

2 Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls, and

3 Minimize the spread of contaminants during implementation of accelerated actions

The accelerated action remediation goals for IHSS Groups 800-2 and 800-5 include the following

1 Remove contaminated soil to below Tier I ALs (Figure 2)

2 Remove tanks, sump, pits, and associated soil to below RFCA Tier I ALs (Figure 2)

3 Disrupt foundation drain potential pathway (Figure 2)

4 Remove OPWL and NPWL between Building 881 and Tanks 24 and 32 at Building 887,

5 Remove tanks 24 and 32 at Building 887, and

6 Remove the UBC 887 concrete slab and dispose of or disposition the concrete according to the RSOP for Recycling Concrete (DOE 1999)

2.6 Treatment

Not applicable

2.7 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations Approximate locations of air samplers are shown on Figure 2

2.8 RCRA Units and Intended Waste Disposition

Tanks 24 and 32 are Resource Conservation and Recovery Act (RCRA) Interim Status Units Additionally, portions of NPWL (Figure 2) are within IHSS Groups 800-2 and 800-5 Tanks 24 and 32 will be excavated for disposal NPWL may be excavated It is anticipated that waste from these units will be classified as low level mixed waste

2.9 Administrative Record Documents

DOE, 1992 – 2001, Historical Release Report for the Rocky Flats Plant, Golden, Colorado

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000, 2000 First Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2000, Second Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2000, 1999 Annual Rocky Flats Cleanup Agreement Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2001, Third Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, February

DOE, 2001, Fourth Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, May

DOE, 2001, First Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2002, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology, Golden, Colorado, January

2.10 Projected Schedule

Remediation of IHSS Groups 800-2 and 800-5 will begin in April 2002

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #02-05 activities were discussed at the March, 2002 ER/D&D Status meeting This Notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) website at www rfets gov

4.0 REFERENCES

DOE, 1992 – 2001, Historical Release Report for the Rocky Flats Plant, Golden, Colorado

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000a, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000b, 2000 First Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2000c, Second Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2000d, 1999 Annual Rocky Flats Cleanup Agreement Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2001b, Third Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, February

DOE, 2001c, Fourth Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, May

DOE, 2001d, First Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2002, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology, Golden, Colorado, January

13|13

Figure 1
IA Groups Location Map

EXPLANATION

IHSS Groupings

- 800-2
- 800-5

Standard Map Features

- Buildings nd othe tructu es
- Demol hed bu ldings
- Solar Evaporatio Ponds (EPs)
- Lake nd ponds
- treams ditches or the dra nage feat res
- Fences nd the ba iers
- Paved roads
- Di oads
- ndus l re Ope ble U Boundary

DATA SOURCE BASE FEATURES:
PACs
Historical Release eport IHRR
2nd Annual pdat
Sept 30, 199
Individual Hazardous Substance Sites IHSS
DOE 199 HRR Report and Subsequent Updates.
Buildings, fences, ydrography, roads and her
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Digitized from the orthophotographs. /95

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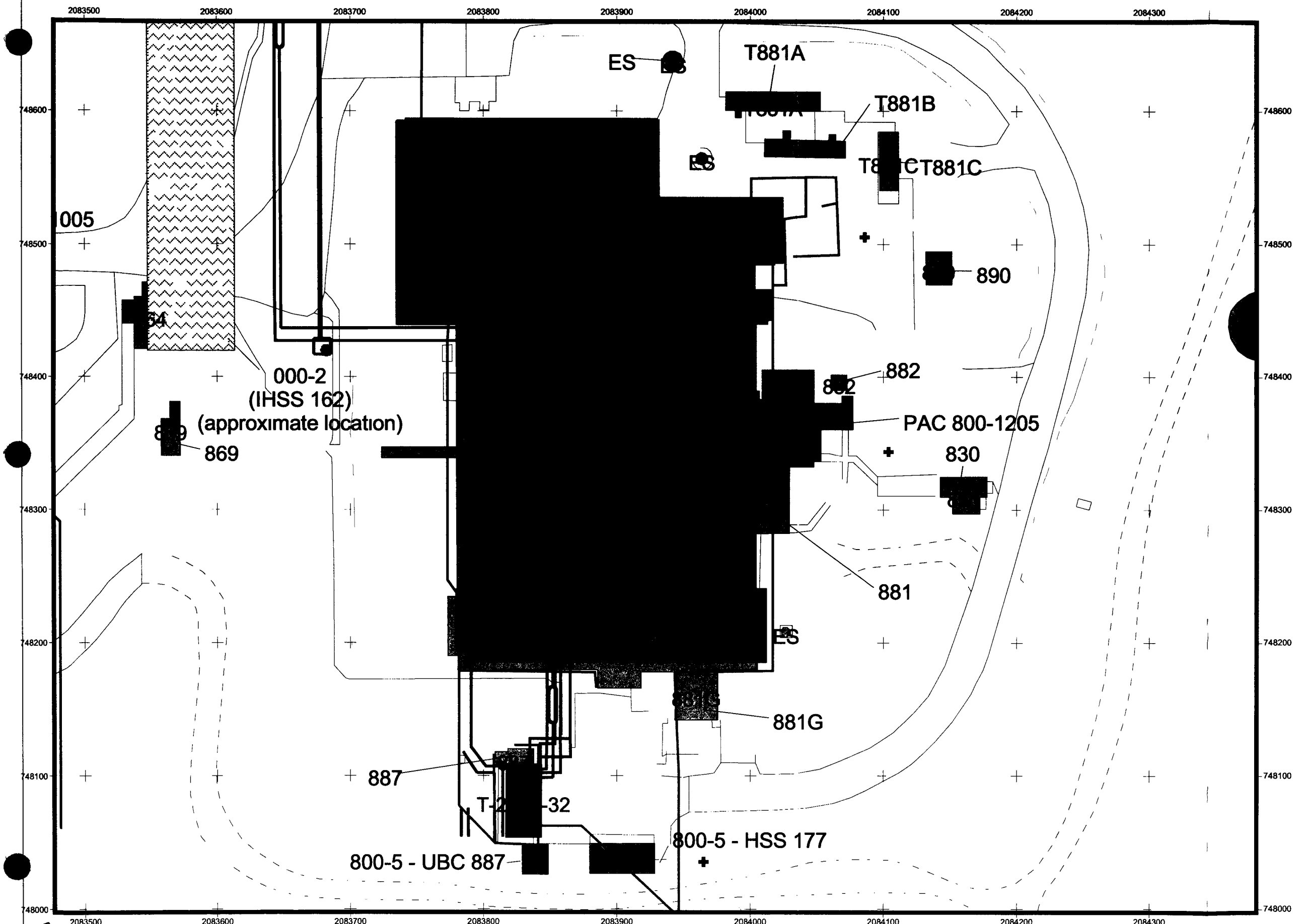
Figure 2
Potential Remediation Area
IHSS Group 800-2 (UBC 881 PAC 800 1205) and 800-5 (UBC 887 and IHSS 177)



KEY

- FY 2002 IHSS locations
- FY 2002 PAC locations
- FY 2002 UBC locations
- Nearby IHSS
- OPWL
- NPWL
- Foundation Drain
- TANK
- Paved areas
- Dirt roads
- Streams ditches or other drainage features
- Buildings and other structures

N

Scale 1 800

20 0 20 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by

Prepared for KAISER HILL

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